

# **EXHIBIT 1**

# MICHAEL PANISH

Expert Witness, Forensic Analysis, Consultant

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CLINTON & MUZYKA, P.C.

February 2, 2018

Shannon M. Pennock, Esq.  
Pennock Law Firm, LLC  
411 Lafayette  
New York City, NY 10003

Re: Arnold v Woods Hole

Dear Ms. Pennock:

Per your request, a site visit was made to view the subject women's bathroom door on December 29, 2017. At the time of my inspection, the subject door did not fit into the frame and consistently failed to allow the door to fully close and latch against the door jamb. The door was observed to be hitting the surface of the door frame prior to reaching the door jamb and stop. No latching was possible, as the door was out of proper alignment with the door frame. Below follows my expert report prepared in this matter.

### I. CREDENTIALS AND EXPERIENCE

I am a licensed contractor in the State of California. I have a national consulting firm that provides services to an array of different clients working as an expert witness for both plaintiff and defense evenly. I am regularly consulted by clients on the safety of doors and door closer devices, their selection, maintenance and their installation. I have received special training and have over 30 years of experience regarding door closers of the type in this injury claim. A division of my construction company has provided thousands of manual door closers to commercial facilities of all types. I have established proactive service contracts for quarterly inspections of doors in a facility to determine that all components meet ADA, NFPA and ANSI compliance. I have personally, installed, serviced, and maintained door closers and their component parts as a part of my contracting business. I have authored numerous articles relating to manual door closers of the type in this matter. Some of those articles are available at [www.constructionwitness.com](http://www.constructionwitness.com). I am a member of the American National Standards Institute and provide upgrades for ADA door compliance. A current copy of my CV is attached to this report.

## II. ASSESSMENT APPROACH

I have been asked to provide opinions regarding the functioning of the women's bathroom door and the affixed manual door closer device aboard the MV Eagle. In order to fully investigate whether the door was properly functioning on September 29, 2016, I have reviewed the following materials:

- Applicable standards and regulations pertinent to the subject door;
- Steamship Authority maintenance records, work order details, ship schematics, door number charts, and other records provided by the Steamship Authority.
- Maintenance manuals and instruction documents from DORMA, the alleged (though unverified) manufacturer of the subject door closer device;
- Personal Injury Reports of passengers injured by doors aboard Steamship Authority passenger ferries including the MV Eagle;
- Depositions of the following Steamship Authority employees:
  - (1) Purser Stephen Healy, who is Purser aboard the MV Eagle and was present at the time Ms. Arnold was injured;
  - (2) Port Captain, Captain Gifford, who is Port Captain for the entire Steamship Authority;
  - (3) Chief Engineer for Steamship Authority, Carl Walker
  - (4) Senior Captain of the MV Eagle, Captain Corbett;
  - (5) Frank Tallino, a maintenance employee for Steamship Authority identified as having been responsible for conducting maintenance on doors aboard the MV Eagle;
  - (6) Phil Parent, Head of Human Resources for Steamship Authority, identified as being responsible for collecting reports of personal injuries that occur aboard Steamship Authority Vessels;
- The deposition of Amanda Arnold.
- A video clip taken by Marine Safety Consultants showing the functional characteristics of the women's bathroom door that was supposedly taken in October 2016 shortly after Ms. Arnold was injured.
- A video showing the closing of the womens' and mens' bathroom door that was taken in May 2017.
- Photographs and videos taken from the on-site inspection on December 29, 2017.

On December 29, 2017, I was allowed to physically inspect the women's bathroom door and its closer device and the details of that inspection and the testing I conducted are below. The inspection took place aboard the MV Eagle, which at the time of the inspection, was docked for winter. In order to assess the condition of the door closer I conducted the following on-site inspection;

- A visual inspection of the door and the manual door closer device both with the cover on, and without the cover;
- Took measurements of the bathroom door, door frame and closer device.
- Removed the cover and inspected the device for any markings, signs of defects and adjustments.

- The door closer was photographed and measured to show the installation and physical location of all components.
- The door and door frame were photographed and measured.
- Prior to conducting measurements of the doors operating speed and measuring closing forces, the door was cycled ten times in order to ensure that any hydraulic fluid was able to reach each of the valves within the manual closer device. This ensures the accuracy of the testing.
- Measured the speed and force imparted by the manual door closer of the women's and men's bathroom door using a Nextech Digital Gauge.
- All measurements were conducted in conformance with applicable and recognized testing standards.
- Video clips were taken to document the functions and operating speeds of the door closers.

At inspection, the door was found to be non-compliant for ANSI (American National Standards Institute), ADA (American with Disabilities Act), NFPA (National Fire Protection Association) and USCG (United States Coast Guard) required standards. As this vessel is required to comply with national standards and marine based regulations, it is also non-compliant with regard to compartmental separation for maritime regulations as listed on the attached door plate.

### III. APPLICABLE STANDARDS AND REGULATIONS

#### A. American National Standards Institute ("ANSI")

The American National Standards Institute is a non-profit organization that acts as the U.S. entity in the International Code Council. An American National Standard adopted by ANSI is a document that has been sponsored by an ANSI-accredited standards developing organization (SDO) or an ANSI-Committee and then approved by ANSI's Board of Standards Review (BSR) as meeting certain criteria for openness, balance, due process, and consensus in standards development. There are two American National Standards that are relevant to the functioning of doors and manual door closer devices: (1) Accessible and Useable Buildings and Functions, ANSI 117.1-2010 ("A 117.1") and (2) Door Controls-Closers, ANSI/BHMA A156.4-2013 ("A 156.4") revised from 2008. These standards have been established to provide both manufacturers and qualified service providers the relevant standards for how door closer devices should function during various portions of the door swing and latch, including how fast a door may close, and provides guidance on how compliance with such standards should be tested.

##### i. ANSI 117.1 (2010).

This American National Standard adopted the ADA standard for the permissible speed at which a door may close, and provides that from an open position at 90 degrees to a position at 12 degrees before latch, a door may not close faster than 5 seconds. At a position of 10 degrees, the latch portion of the door's swing must be initiated. The latch portion of a door's closing should take at least 1 to 1.5 seconds. As such, a door should not close faster than 6 to 6.5 seconds. A longer period of time to close and latch is of course acceptable and reduced speeds of operation are permissible. The ultimate goal of a hydraulic controlled door closer, such as the door closer at issue here, is to provide a smooth and consistent rate of speed while closing that does not interfere with pedestrian users, and allows safe passage through the opening without making contact with someone as they walk through the opening. The latch portion of the door closer is required to retard the swing speed of the door primarily for safety to all users, and to also provide adequate force to achieve a positive latch with the door strike on the frame.

ii. ANSI/BHMA A156.4-2013 ("A 156.4") revision of 2003.

A 156.4 provides the appropriate closing force for grade 1 closers, such as the Dorma 8616 closer at issue here and instructions for manufacturers on how to test closure devices under controlled circumstances in order to "to insure safety, security and stability to which the public is entitled."

Per ANSI standards incorporated into ADA 404.2.7 (2010), the maximum allowed operational resistive force is 5 pounds observed on push or pull sides of the door to motivate the door. It is an accepted industry standard that all doors of the type inspected should move with that force. ADA has determined that the 5 pounds of force, when coupled with a properly functional manual door closer provides safe usage of all doors in this class. Amounts of closing force above 15 pounds can be dangerous.

B. The American with Disabilities Act ("ADA")

The Steamship Authority is a public passenger ferry and the MV Eagle is required to be in compliance with ADA regulations according to the depositions of both Steamship Authority employee Phillip Parent and the Senior Captain of the MV Eagle, Captain Corbett.

ADA compliance requires approximately 5 pounds of both push and pull force to activate and regulate the door from start to finish. Slightly higher forces, not to exceed 15 pounds are acceptable when adjacent excessive pressure conditions create opposition to the operation of the door closer for the latching portion of travel. I measured the push pull using an analog gauge made by Desik (Model DL 100). My findings were observed as higher than the required 5 pounds on both push and pull. These observations were made on both the interior and exterior side of the door. The average for push was 12 pounds of force required to motivate the door, and 15 pounds of force required on the pull side. This measurement was made by positioning the gauge approximately 1 inch from the latch edge of the door at lock height.

ADA 404.2.7 specifically requires that from 90 degrees to 12 degrees from latching, that a door's rate of closing swing speed be no faster than 5 seconds. At 10 degrees, the latch portion of the closer is initiated, which controls the closing of the door. As such, the ADA requirement necessarily means that a door must take longer than 5 seconds to completely close even though the ADA does not specify a separate speed for the latch portion. Although the ADA regulations were first promulgated to assist individuals with disabilities, the regulations pertaining to how fast a door can close is recognized in the industry as a safety standard necessary for protecting all people who utilize public doorways. Retarding the latching portion of the closing door travel is designed into all manual door closers of this type. Failing to have positive control of the door closer operation during all portions of operation creates inconsistent and potentially dangerous operational conditions.

C. Massachusetts Regulations - 521 CMR ARCHITECTURAL ACCESS BOARD

Regulations enacted by Massachusetts's Architectural Access Board similarly provide the following requirements for the speed at which doors may close and the maximum push/pull force required to operate a door.

Section 29.6: "If a door has a closer, then the sweep period of the closer shall be adjusted so that from an open position of 90 degrees, the door will take at least six seconds to close." (emphasis added).

Section 26.8 provides that the maximum push or pull force for operating an interior hinged door is 5lbs.

D. The National Fire Protection Association ("NFPA")

NFPA requires that any fire rated openings have a correctly regulated door closer, smoke seals surrounding the frame door stops and bottom, and positive latching hardware. The composition of the door and frame materials dictates the extent to which fire protection is provided. Additional NFPA requirements specify that regular inspection of fire doors take place and be well documented.

#### E. United States Coast Guard Regulations

Doors identified as fire doors aboard vessels must be self-closing and capable of achieving a positive latch.

#### IV. INSPECTION AND FINDINGS

As the subject door is installed on a marine vessel, it has been labeled as a USCG Class A fire rated door. The door, when correctly operating (meaning fully latching in the frame, which also has to be fire rated, but was unlabeled) is supposed to conform to DSM 02-06-00063, and is appropriate for a maximum of 60-minute fire suppression per 48 CFR and NVIC9-97. Despite the labelled fire rating, the door itself had no smoke seals either on the bottom of the door or elsewhere. Nor was there a label sticker or plate seen on the door frame indicating any comparable fire rating.

The subject door was observed to be a hollow metal type approximately 1-3/4" thick, 6'-8" high by 37 1/2 inch wide rated A60 (up to one hour) door. Interrogatory responses provided by the Port Captain, Captain Gifford, state that the subject door is 190 lbs. I was not able to independently verify that this was indeed the weight of the door, however, knowledge regarding the weight of the door was not required to assess the door's closing speed and the door closer's ability to properly regulate the door while closing, or the door's ultimate closing force. Knowledge of the door's actual weight is essential, as the proper selection of an appropriate door closer sized and adjusted is determined by the weight and size of the door.

The door on visual inspection had a medium to heavy duty door closer. My review of documents produced by the defendant Steamship Authority, including a Joiner Door & Frame Schedule, and a document that included a Door Numbering System for the MV Eagle, and Captain Gifford's answers to Interrogatories indicate that the door closer device is a Dorma 8616. When correctly installed, used and maintained, the Dorma 8616 has been manufactured to comply with both ANSI and ADA standards pertaining to door closing speed and operation. Dorma does not endorse the use of this closer in a marine environment.

At inspection, I confirmed that the subject door closer had a spring tension adjustment, a swing, latch speed and back check valve adjustment. I was unable to confirm the level of spring tension that the door closer was adjusted for at inspection because I was not allowed to rotate the spring tension control of the device or otherwise adjust it in any way. The Dorma 8600 manual relevant to the 8616 closer indicates that the 8616 closer is shipped from Dorma with a pre-loaded spring tension of 4 out of a potential of 6. Failure to adjust the spring tension of a door closer to the proper spring level tension setting for the door's weight can lead to premature failure of the closer and can keep the door from properly closing with any consistency. It has been my experience that when improper pre-loaded spring tension settings are used, the unpredictable operational characteristics of the door cannot be corrected appropriately. This improper spring tensioning creates the necessity to correct the function of the door closer through other inappropriate valve adjustments which lead to non-compliant operation.

Upon inspection, it was apparent that the door closer and door closer cover had not been removed when the recent painting of the door and frame were made. Once the plastic cover to the closer was removed there was a trail of grease and dirt indicative of a hydraulic leak from the closer prior to the most recent paint job. Photographs taken at the time document the evidence of the hydraulic leak. Leaking hydraulic fluid from a door closer indicates that a door is not being properly maintained, a seal has failed or has been improperly adjusted at some previous time. Any of these conditions will create an inconsistent or unregulated door closer operation.

The subject door was cycled ten times prior to any hydraulic evaluation. The cycling of a door and closer prior to hydraulic evaluation ensures accurate testing as it distributes the hydraulic fluid throughout the tracts of the closer so that it has a chance to reach each of the valves. Once that was completed, force measurements of the latching and swing regulation were taken using a calibrated Nextech Digital Force Gauge as required by ANSI standards. This gauge is calibrated by the National Institute of Standards and Technology ("NIST") and is certified to accurately take such measurements. To test the force measurements of the door's latching and swing regulation, the gauge was

placed on the door frame to record door impacts approximately 1 inch from the latch edge of the door. The door was then held open at 90 degrees and released to record the force of closing. The test was repeated several times in order to calculate an average measurement of closing force. Each measurement was recorded. In addition, the speed of closing for the door was also timed. Measurements were recorded with both photographs and video clips. The average observed force of the subject door at latch was 112.175 pounds of force with rebound, and 92.166 pounds of force, without rebound. The required ADA and ANSI standards for operation are as mentioned above. The difference between the acceptable forces and the observed forces on the door are an average of 97.175 pounds of force with rebound, and 77.166 pounds of force with no rebound. During the force testing, the door closer never retarded the swing speed of the door as it passed through the last 10 degrees on its way to the threshold. There was no observed regulated or controlled latch function of the subject door closer during any portion of my inspection.

During the inspection, the women's door closed much faster than 5 seconds from 90 degrees to 12 degrees, and during the latching portion of the close (10 degrees to latch) displayed no pause or delay at all. The door moved from a fully open position of 90 degrees to impacting the door frame position within 1.5 to 2 seconds. This closing speed comports with Ms. Arnold's recollection at deposition that the door slammed on her fingers in a matter of seconds. Carl Walker testified at deposition, that as a result of my inspection and the testing I performed, that maintenance personnel for Steamship Authority adjusted the women's bathroom door closer to fix the speed at which the door closes.

Any door that travels at a rate that exceeds the standard swing speed, and is not retarded by the closer latching portion is dangerous and needs to be replaced. Failing to observe, maintain and correct any non-compliant condition is below the industry standard of care. The required retarded latch speed was non-existent on the women's bathroom door. This makes for an incredibly dangerous condition as the door closer is not in control of the door and is not regulating speeds or closing forces. The standards for closing speed are intended to ensure that people have time evaluate, react, and respond to safely pass through a door without being injured. The forces and closing rates of the door as measured at the time of my inspection were in violation of both the ANSI and ADA standards. In the October 2016 video clip taken by a consultant for Steamship Authority Consultants just after Ms. Arnold was injured, the door's closing speed was clearly less than 5 seconds. There did not appear to be any activation of the latch cycle of the closer to regulate the final 10 degrees of closing on the door. My understanding from testimony from Captain Gifford, who was present when the video was taken, is that the video was taken while the boat was docked at port in calm waters. There was no indication that other or additional tests were conducted on the door at that time or taken while the boat was out on open water.

Any water cross currents, or other passage way wind conditions that may have been allegedly claimed by the crew as causing the door to slam on Ms. Arnold should not have been able to overwhelm a properly functioning door closer device. A properly sized, adjusted and maintained door closer should be in complete control of the entire swing and latch cycle regardless of any angle of inclination, adjacent weather or errant gust conditions if correctly chosen, installed and maintained. Door closers that are either not designed and manufactured to overcome expected conditions encountered on a seagoing vessel or that are not properly maintained may not be able to properly regulate the force and speed of a door if ambient conditions are able to overpower the door closer components.

The evidence I have reviewed in both the maintenance records produced by Steamship Authority and the deposition testimony of Steamship Authority employees indicates that the women bathroom door closer device was never maintained, serviced or adequately inspected for proper functioning from the time of its installation in 2011 until the day that I inspected it on December 29, 2017. In addition, I saw no evidence in the Steamship Authority maintenance records that any maintenance or adjustment was ever made to the door closer prior to Ms. Arnold's injury or after her injury and prior to my inspection. Under normal conditions on dry land a door closer like the one involved here should at a minimum be regularly serviced on an annual basis. However, door components exposed to a marine environment need to be specific to that environment, and require more frequent maintenance, and replacement than a similar product installed on dry land. Ambient conditions such as exposure to sea air can limit the lifetime of the hydraulic fluid, finish and function of this type of door closer.

Manufacturers of door closers suggest ongoing routine maintenance of door closer products. Quarterly, semi-annual, and or yearly inspections of these devices is considered routine especially for high traffic, public facilities like the MV Eagle's public bathrooms. Daily inspections to determine that all components are properly installed, no screws are loose, and nothing is bent or dangling should be part of this routine inspection. The Purser for the Eagle, Purser Healy, testified at deposition that he conducted a visual inspection of the door each day during cleaning of the bathroom and would have noticed if the door was slamming too quickly and would have brought this to the attention of the Senior Captain for maintenance. Purser Healy was unable to even state what in his opinion he considered a safe rate of closing speed for the public bathroom door and could not identify any standards for safe closing speed. The depositions I reviewed indicated that no one at Steamship Authority was able to identify what a safe speed for closer operation would be for the bathroom door. According to the deposition testimony of Carl Walker and Captain Corbett the safe functioning of the women's bathroom door depended on the subjective impressions of Purser Healy and other crew charged with inspecting and cleaning the bathroom as to whether the door was closing too fast. In addition, these visual inspections apparently failed to uncover that the closer was leaking the hydraulic fluid that I observed at the inspection. The hydraulic fluid and associated grease marks observed at the time of my inspection are a tell-tale sign that the door closer has been improperly adjusted or component seals have failed. These leaks indicate that the door closer requires maintenance or needs to be completely replaced.

As indicated, I was able to view a video clip provided to me that showed the function of the subject door and closer that was supposedly taken by Marine Safety Consultants on behalf of Steamship Authority's insurance carrier in October 2016 and thus, relatively soon after Ms. Arnold was injured by the door on September 30, 2016. According to the deposition of Port Captain, Captain Gifford, this video was taken by an employee of Marine Safety Consultants while the boat was docked at port. Captain Gifford could not recall any other testing that was done to assess whether the door was properly functioning other than timing the door's closing speed. The observed video clip shows that the door was improperly regulated at the time of the incident. This unregulated and uncontrolled dangerous condition was further confirmed at the time of my site visit.

Purser Stephen Healy, Carl Walker, the Chief Engineer for Steamship Authority, the Sr. Captain of MV Eagle, Captain Corbett and Frank Tallino, a maintenance employee for Steamship Authority that considered to be the door maintenance expert for Steamship Authority, all testified that no maintenance or recorded adjustments to the closer had been performed from the time the closer was installed in 2011 until the time of my inspection. The Chief Engineer for Steamship Authority, Carl Walker, testified that there was no "preventative maintenance" to service this door on a routine basis like there is for other equipment on the boat.

The video clip from October 2016, in conjunction with my on-site observations, provide reasonable substantiation that the subject door and closer were in an equal or nearly equal condition at the time of my inspection, as at the time of the subject injury incident. The only observable change to the door is that now, it does not fully close into the subject door frame as it did at the time of the October 2016 video.

For comparison, the men's bathroom door was also observed upon my site-inspection, and although this door was also found to be non-compliant at the time of my inspection, it had the latching portion of the door closer operation functioning. The observed forces recorded for that door averaged approximately 23.15 pounds of latching force consistently. This still exceeds the required 5 to 8 pounds of force that would have provided safe usage. In comparison to the subject incident doorway, the men's door was moving much slower at approximately half the rate of speed and 1/4th the rate of closing force than the women's bathroom door.

Neither of these two doors were observed to fit the door frame or make contact with the latch strike plate and door stops. As such, like the women's door, the men's room door did not meet the standards for ADA, ANSI, USCG or NFPA.



Dorma, the manufacturer of the subject closer device, provides instructions on the safe usage of hydraulic Dorma closers such as the one that was installed on the women's bathroom door. This document titled 'Product Information and Safety Advice' states that under "normal" conditions the door closer must be properly serviced at least on an annual basis. It is clear from the depositions of those tasked with ensuring the safe working of the door closers aboard the MV Eagle that there was never any preventative maintenance conducted on the subject closer let alone the servicing specified by Dorma as necessary for ensuring the safe operation of this closer. The lack of preventative, proactive maintenance is below the standard for maintaining this type of hardware product. Failing to make adequate and meaningful daily inspections, seek professional service providers for annual evaluation of all doors throughout this vessel and repair and replace defectively functioning hardware components also fails to meet the standard of care necessary to maintaining properly functioning doors. These failures created a dangerous condition that directly led to Ms. Arnold's injury. From all information considered, the Steamship Authority did not have a protocol or standing work order in place for conducting necessary preventative maintenance and service on this door. No adjustments were ever made to the door by a qualified and trained service provider. It is surprising that there are no other reports of passengers who were also injured by the women's bathroom door.

It is my expert opinion based upon over 35 years working as a door and security contractor, providing ongoing inspections for ADA and life safety, in conjunction with my professional training and experience, that the subject door closer, and the adjacent door closer in the men's room are defectively functioning and need to be replaced.

I hold all of the opinions expressed in this report to a reasonable degree of scientific certainty. In the event that further information is provided to me, I reserve the right to add, alter or amend the opinions as expressed in this initial evaluation of this claim. A copy of my current CV is attached to this report.

Respectfully submitted,

A handwritten signature in cursive script that reads "Michael Panish".

Michael Panish  
Expert Witness and Consultant